

### **REMARKS/ARGUMENTS**

This is responsive to the Official Action of December 31, 2008. Reconsideration of this application is requested. Claims 1-4 and 6-8 will be pending in the application subsequent to entry of this Amendment.

Claim 4 directed to a photocatalyst film has been written in independent format to include the definition of the coating liquid of claim 1 and to incorporate the procedure of claim 5. Claim 5 has been canceled and the dependencies of claims 6 and 8 adjusted accordingly.

The sole issue raised in the outstanding Official Action is the patentability of claims 1 and 4-8 based upon a combination of U.S. 6,071,606 to Yamazaki et al in view of published U.S. application 2004/0067849 to Tanaka et al. For purposes of this response attention will be directed to this rejection although there is a further rejection directed to claims 2 and 3 only, both claims being dependent from claim 1.

The present application presently includes two types of claims, claims 1 to 3 directed to "a photocatalyst coating liquid" and claims 4, 6 and 7 directed to "a photocatalyst film".

Therefore, the photocatalyst coating liquid and photocatalyst film of the present application will be compared with their "counterparts" in the Yamazaki reference.

The photocatalyst coating liquid of the present claim 1 comprises

(A) titanium oxide particles formed of anatase crystal,

(B) colloidal silica, and

(C) a hydrolysis-condensate of a titanium alkoxide, the hydrolysis-condensate containing organic unreacted groups and serving as a binder.

On the other hand, the sol mixture of the Yamazaki reference comprises

a first sol containing a precursor of titania (e.g., titanium alkoxide such as titanium isopropoxide used in Example 1),

a second sol containing at least one compound (e.g., colloidal silica used in Example 1),  
and

a third sol containing an amorphous metal oxide (e.g., amorphous silica used in Example 1).

The photocatalyst coating liquid of the present claim 1 and the sol mixture of Yamazaki reference can be compared as follows.

(i) The (B) colloidal silica in the coating liquid in the present invention and the second sol containing colloidal silica in the sol mixture in the Yamazaki reference are the same.

(ii) The (A) titanium oxide particles formed of anatase crystal in the coating of the present invention are not contained in the sol mixture of the Yamazaki reference.

The Yamazaki reference, col. 3, lines 6 – 7, describes that “This titania may be in the amorphous form or in the anatase-type or rutile-type crystal form.” This anatase-type titania is present in a film obtained by baking the sol mixture at a high temperature of 300 to 850°C (column 5, lines 35 – 45), but is not present in the sol mixture (*see* the Table attached hereto).

The photocatalyst film recited in the present claim 4 will be compared with the hydrophilic film of Yamazaki reference.

The photocatalyst film of the present claim 4 is formed from the photocatalyst coating liquid of the present claim 1, and more specifically, as is specified in the present claim 5, it is formed by holding a coating film formed from the photocatalyst coating liquid on an organic substrate, at a temperature of 200°C or lower. Due to this treatment at a temperature of as low as 200°C or lower, the (C) hydrolysis-condensate of titanium alkoxide as a binder is not converted to titania but is present in the photocatalyst film, although the organic unreacted groups may react to some extent.

Like the photocatalyst coating liquid recited in the present claim 1, therefore, the photocatalyst film of the present claim 4 contains (A) anatase-type titanium oxide particles, (B) colloidal silica and (C) a hydrolysis-condensate of titanium alkoxide as a binder, wherein (A) component and (B) component as dispersion phases are bonded with (C) component.

On the other hand, the hydrophilic film of the Yamazaki reference is obtained by baking the sol mixture at a high temperature of 300 to 850°C (col. 5, lines 35 – 45) and contains anatase-type titania (TiO<sub>2</sub>) formed by the conversion of titania precursor(titanium alkoxide) in the first sol during the baking, colloidal silica derived from the second sol, and silica derived from the third sol, wherein the anatase-type titania and the colloidal silica as dispersion phases are bonded with silica that acts as a binder (col. 3, lines 14 – 41).

The photocatalyst film of the present claim 4 and the hydrophilic film of the Yamazaki reference will be compared as follows.

(i) The photocatalyst film of the former contains (C) hydrolysis-condensate of titanium alkoxide as a binder in the photocatalyst coating liquid, while the hydrophilic film of the latter does not contain the precursor of titania (titanium alkoxide) in the first sol of the sol mixture since it is obtained by the baking at a high temperature.

(ii) In the photocatalyst film of the former, (C) hydrolysis-condensate of titanium alkoxide as a binder binds (A) anatase-type titanium oxide and (B) colloidal silica which are dispersion phases, while in the hydrophilic film of the latter, silica in the third sol of the sol mixture works as a binder and binds the anatase titania obtained from the first sol and the colloidal silica obtained from the second sol. These two inventions are different in their binding agents (*see* the Table attached hereto).

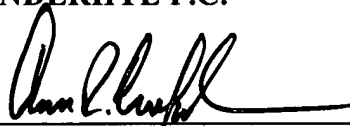
As explained above in detail, the photocatalyst coating liquid of the present claim 1 and the photocatalyst film of the present claim 4 are remarkably different from their "counterparts" of the Yamazaki reference in their constitution. Therefore, the present claims 1 and 4 are not at all obvious over any combination of Yamazaki reference with Yamamoto as a secondary reference.

For the above reasons it is respectfully submitted that claims 1-4 and 6-8 define inventive subject matter. Reconsideration, entry of this Amendment and allowance are solicited.

Respectfully submitted,

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Table

Present Invention		Yamazaki Reference	
Coating liquid (claim1)	Film(claim4)	Sol mixture	Film
 coating + drying(200°C or lower)		 coating + drying + baking(300~850°C)	
(A)titanium oxide particles formed of anatase crystal	(A)titanium oxide particles formed of anatase crystal	_____	anatase-type titania
(B)colloidal silica	(B) colloidal silica	second sol containing colloidal silica	colloidal silica
(C)hydrolysis - condensate of a titanium alkoxide	(C)hydrolysis - condensate of a titanium alkoxide	first sol containing a precursor of titania (titanium alkoxide)	_____
_____	_____	third sol containing amorphous silica	amorphous silica